

IN THE CLAIMS:

Please substitute claims 1-3 as originally filed, which appear on page 15, with claims 1-3 as filed in the Article 34 amendment of November 22, 2001. The page containing claims 1-3 is marked "AMENDED SHEET" and is attached hereto. Following the insertion of claims 1-3, please amend the claims as follows:

Please amend the claims as follows:

3. (Amended) Method according to Claim 1, characterized in that the bacterial culture used was previously subjected to an adaptation, by successive transplants on a substrate, particularly of chalcopyrite, by progressively and artificially increasing the concentrations of the copper in solution, in order to render it able to develop in media of which the mass concentrations of copper are of the order of 50 g/l.

4. (Amended) Method according to Claim 1, characterized in that a pH included between 1.2 and 1.6 is maintained in the biological leaching reactors (1).

6. (Amended) Method according to Claim 1, characterized in that all along the phase of biological leaching, the physiological state of the bacterial culture is monitored with the aid of means for on-line analysis of the gases emerging from the reactors.

7. (Amended) Method according to Claim 1, characterized in that the step of biological leaching is followed by a second step during which, in a first phase:

- the pulp issuing from the biological leaching reactors (1) is admitted in precipitation reactors (5) in which the iron is eliminated by provoking a precipitation of jarosite, by addition of calcite, and the solution is maintained at a pH less than 3,

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- the neutralized pulp is admitted in a decanter (7) and a part of the solids is made to recirculate at the head of the precipitation reactors (5).

10. (Amended) Method according to Claim 7, characterized in that the outlet (19) of the extraction unit (17) is placed in communication with the inlet (4) of the precipitation reactors (5), so as to cause part of the raffinate collected at this outlet (19) to be recirculated by causing it to traverse said reactors (5) again with a high flowrate (Q2) with respect to the flowrate (Q1) of the pulp coming from the biological leaching reactors (1), so as to provoke a dilution of the aqueous solution subjected to extraction, up to a concentration of copper of the order of about 10 g/l, i.e. up to a value corresponding to the possible extraction of the copper in an extraction unit (17).

Please add the following claim:

13. (New) Method according to Claim 2, characterized in that the bacterial culture used was previously subjected to an adaptation, by successive transplants on a substrate, particularly of chalcopyrite, by progressively and artificially increasing the concentrations of the copper in solution, in order to render it able to develop in media of which the mass concentrations of copper are of the order of 50 g/l.

CLAIMS

1. Method for treating copper sulphide containing ore, comprising a step of  
5 biological leaching whereby the minerals are subjected, in reactors (1) in cascade  
arrangement, wherein the temperature is maintained between 75°C and 85°C, to  
the action of a bacterial culture, which comprises a thermophilic bacterium of the  
Sulfolobus type, leading to solution of the copper, in which a solid mass  
proportion of the culture medium is maintained above 10%, characterized in that,  
10 during said biological leaching step:

- a continuous supply of the sulphur containing minerals is effected,
- the medium containing the bacterial culture is subjected to continuous  
mechanical rotary stirring to ensure oxygenation thereof and suspension of the  
solid elements,

15 - oxygenation is promoted by an injection into the medium of air enriched  
with pure oxygen.

2. Method according to Claim 1, characterized in that the sulphur containing  
minerals are supplied to the culture medium in the form of a sulphur containing  
concentrate presenting a granulometry d80 less than one hundred micrometers.

20 3. Method according to one of the preceding Claims, characterized in that the  
bacterial culture used was previously subjected to an adaptation, by successive  
transplants on a substrate, particularly of chalcopyrite, by progressively and  
artificially increasing the concentrations of the copper in solution, in order to  
render it able to develop in media of which the mass concentrations of copper are  
25 of the order of 50 g/l.

AMENDED SHEET